

KEY FEATURES

- Released for commercial production in northern NSW and Qld in 2009.
- White flowered “blue pea” (green seeded) suitable for human consumption or livestock feed.
- Early maturity, semi-leafless erect plant type.
- Resistant to powdery mildew.
- Moderately resistant to moderately susceptible to downy mildew.
- Moderately resistant to *Bean leaf roll virus* (BLRV).
- Resistant to *Pea seed-borne mosaic virus* (PSbMV).

Where field peas fit in the farming system

Field peas offer flexibility and provide many benefits to growers in the northern region. They can be grown not only for grain production, but also as a green manure crop, made into hay or silage or even grazed depending on seasonal conditions and market prospects for grain and livestock.

Field peas have the widest adaptation to soil type of all the pulses and there would be very few farming situations in the northern region where field pea would not be suited.

Field pea is the only pulse crop tolerant of sodic soils, one of the reasons they have created interest in the region. They are sensitive to high-exchangeable aluminium levels (acid soils) and do not tolerate extended periods of waterlogging.

Level paddocks are preferred; avoid paddocks with gilgai's, sticks or rocks and hardpans.



Breeding

The cross for Maki[®] (tested as line AP18) was made in New Zealand by Plant Research NZ Ltd and identified and evaluated by the University of Sydney Plant Breeding Institute (PBI), Narrabri. This field pea breeding program was financially supported by the Pork Cooperative Research Centre.

Maki[®] was selected for its improved yield potential and quicker flowering in the warmer, shorter season environments of northern NSW and southern Qld combined with its resistance to powdery mildew, *Bean leaf roll virus* (BLRV) and *Pea seed-borne mosaic virus* (PSbMV).

Agronomic Characteristics

Maki[®] is a blue, semi-leafless, field pea with green cotyledons and white flowers. Maki[®] has a very erect growth habit, is of medium height with a mid season maturity and good resistance to seed bleaching.

Maki[®] is resistant to powdery mildew, *Pea seed-borne mosaic virus* (PSbMV) and moderately susceptible to moderately resistant to *Bean leaf roll virus* (BLRV).

Agronomic Features & Disease Resistance

	Seed type	Leaf type	Plant height	Relative flowering time	Maturity	Standing at maturity	Pod shatter resistance	Black spot	Downy mildew	Powdery mildew	*Bacterial blight (<i>P. syringae</i> pv. <i>syringae</i>)	PSbMV	Bean leaf roll virus (BLRV)
Maki [®]	Blue	SL	M	Early	Early	Fair-Good	S	S	MS-MR	R	S	R	MR
Yarrum [®]	Dun	SL	M	Mid	Early-mid	Fair	S	S	S	R	MS-MR	R	MS-MR
Kaspa [®]	Dun	SL	M	Late	Late	Fair	R	MS-MR	MS-MR	S	S	S	S
Parafield	Dun	C	T	Mid-late	Late	Poor	S	S	S	S	MS-MR	S	S
Excell	Blue	SL	S	Early	Mid-Late	Fair-Good	VS	S	MR	S	S	S	S

*Resistance only demonstrated to the Bacterial blight pathovar *Pseudomonas syringae* pv. *syringae*.

R = resistant; MR = moderately resistant; MS = moderately susceptible; S = susceptible.

Leaf type: C = conventional, SL = semi-leafless.

Yield and Adaptation

Maki[®] has been released for areas in Qld and NSW north of the Macquarie Valley, where powdery mildew can be a major problem. It has shown high yield potential across a range of environments in central and northern NSW as well as southern Qld.

Northern region S4 – Long Term Yields as % of Yarrum[®], data years 2006-2009

Variety	4 Year Average	Combined Site Means			
		2009	2008	2007	2006
Maki [®]	114	97	97	145	119
Yarrum [®]	100	100	100	100	100
Kaspa [®]	62	73	43	67	63
Parafield	71	66	52	78	87
Excell	48	41	44	60	45
Yarrum [®] yield (t/ha)	2.00	1.18	2.27	1.48	1.98
Number of trial sites	25	4	7	7	7

Yield data courtesy of: Pork CRC project 1A-108

“Development of adapted field pea varieties for pork producing regions in northern and southern Australia”

Quality Characteristics

Maki[®] is a green seeded blue pea that is suitable for human consumption or stock feed. It has very low levels of Trypsin Inhibitor Activity which is a significant anti-nutritional factor for livestock. The variety produces grain with a low hard seed count and shows good resistance to seed bleaching.

Management Package

Sowing Date

- Planting time should be adjusted to allow flowering to commence from mid to late August to avoid the main frost period.
- Planting earlier than recommended can result in frost damage, and later than recommended planting dates can potentially result in yield loss due to heat stress.

Region	Week	May				June			
		1	2	3	4	1	2	3	4
Burnett				Yellow	Green	Green	Green	Yellow	
Darling Downs				Yellow	Yellow	Green	Green	Green	Yellow
Western Downs/Maranoa			Yellow	Green	Green	Green	Yellow		
NW / NSW			Yellow	Yellow	Green	Green	Green	Yellow	
Liverpool Plains				Yellow	Yellow	Green	Green	Green	Yellow

 Preferred Sowing Window

 Earlier or later than recommended. Yield reduction likely.

Seeding Rate and Planting Depth

- Aim for a plant population of 60 plants/m²; plant populations of less than 30 plants/m² could result in significant yield losses and cause harvest difficulties due to plant lodging.
- The average seed size range of Maki[®] is 18 to 21 grams per 100 seeds which will mean a sowing rate of 125 to 150 kg/ha assuming a 90% or greater establishment rate.
- Target a typical planting depth of 5 to 7 cm. Field pea is large seeded and should be placed well into the moisture band to ensure uniform germination and establishment.

Row Spacing

- Planting into standing stubble is encouraged, with row widths ranging from 15 cm to 35cm.
- Row widths could be reduced in bare fallows.

Inoculation

- Appropriate inoculation is essential. Use only Group E inoculant and ensure that the inoculant has been correctly stored and the expiry date has not passed.

Nutrition

Based on experience to date, apply phosphorus at the same rates that you would apply to wheat. Depending on soil nutrient status it may be advisable to apply a starter N fertiliser to assist with seedling emergence and establishment. If soils are zinc responsive a fertiliser containing zinc would be ideal. All pulses use potassium at a greater rate than cereals so it is advisable to monitor soil potassium levels. Recommendations may change with more in-field data and experience.

Weed Control

Field peas have the widest selection of herbicides recommended for any pulse crop. Many farmers in other regions regularly use field pea as a cleanup crop for this reason. Even though growing field pea gives greater control of weeds it is advisable to avoid situations where there are no control options or where weeds are unlikely to be controlled.

Crop tolerance and yield responses to herbicides are strongly influenced by seasonal conditions. Herbicide registration differences occur between NSW and Qld so careful reference to the product label prior to use is advised.

The more common herbicide options are;

- | | |
|-------------------------------------------|---------------------------------------------------------------------------------------------|
| Pre-emergent: - | trifluralin, triallate, cyanazine, pendimethalin. |
| Post sowing, pre-emergent: - | imazethapyr, cyanazine, metribuzin, diuron. |
| Post-emergent broadleaf control: - | metribuzin, cyanazine, MCPA, picolinafen, imazethapyr, imazamox, flumetsulam, diflufenican. |
| Post-emergent grass control:- | There is a wide range of Group A grass selective herbicides available. |

Disease Management

- Powdery mildew is a major disease threat to field pea in the northern region. Maki[®] is Resistant to this disease and for this reason is the preferred variety north of the Macquarie Valley.
- Maki[®] is moderately susceptible to moderately resistant to downy mildew (Kaspa[®] resistant race).
- Maki[®] is moderately susceptible to moderately resistant to *Bean leaf roll virus* (BLRV).
- Maki[®] is resistant to *Pea seed-borne mosaic virus* (PSbMV).
- Maki[®] is susceptible to both bacterial blight and black spot (important diseases of the southern regions). However, these diseases are not considered to be significant in the northern region.

Insect Control – Heliothis (*Helicoverpa* spp)

Registered products for field pea are different from chickpea so check labels and minor use permits before use.

- Observations to date indicate that heliothis focus on field pea flowers and pods and not the leaf area.
- Recommended thresholds with field pea for the stockfeed market are 4-5 larvae per 10 sweeps when using a sweep net for sampling.
- However when targeting human consumption markets there is little tolerance for grub damage and the threshold should be reduced to 1 larvae per 10 sweeps.
- Due to the growth habit of field pea the use of a beat sheet for sampling will be very difficult.
- Due to the difficulty of using beat sheets in pea crops many agronomists have adopted the use of sweep nets.

Desiccation and Harvest

Maki[®] does not possess the shatter resistant sugar pod trait and therefore harvest will need to be conducted in a timely manner. Desiccation can be used as an aid to harvest.

- Desiccation of field pea crops prior to harvest can assist with timeliness of harvest, maintain grain quality and reduce soil and trash contamination of the sample associated with lodged crops. Crop maturity, and hence time of harvest can be advanced by 7 to 14 days.
- Harvest problems caused by late weed growth or irregular ripening and yield losses from potential shattering or wet weather delays, can also be minimised with desiccation.
- Information on correct timing of desiccation is detailed in "Northern region field pea management guide".
- Glyphosate 540g/L (e.g. Roundup PowerMAX[®]) is registered for crop desiccation with the proviso that it is not applied to crops intended for planting seed or seed for sprouting.
- Diquat 200g/L (e.g. Reglone[®]) is registered for desiccation of both grain and seed crops.

Harvest of field pea crops normally occurs before both winter cereals and chickpea, and should start as soon as seed moisture falls below 14%.

- Delayed harvest leads to seed quality loss, harvest clashes with other crops, greater soil contamination, increased pod shattering, and problems with late weed growth, more severe crop lodging and increased crop vulnerability to weather damage.
- Grain damage can be minimised by adjusting header settings. In particular low drum speeds should be used. Minimise subsequent handling particularly through screw-type augers.
- As the crop may lodge as it approaches harvest maturity, it is recommended that harvester speeds be reduced from normal cereal harvest speeds.
- The use of contour-following crops lifters may also be an advantage.

Plant Breeder Rights (PBR)

An application is currently before IP Australia for Maki[®] to be protected under Plant Breeders Rights (PBR) legislation. Growers can only retain seed from production of Maki[®] for their own seed use.

An End Point Royalty (EPR) of \$4.40 per tonne (GST inclusive) which includes breeder's royalties applies upon delivery of this variety, which funds future plant breeding.

Seed Availability

Maki seed is available through an AGT Affiliate:

Agrigrain - Narromine: (02) 6889 2200

Auswest Seeds - Forbes: (02) 6852 1500

Grainland – Moree: (02) 6752 1511

Woods Seeds – Goondiwindi: (07) 4670 0400

Associated Grain – Dalby: (07) 4662 1999

Or your local retailer.

Maki[®]

Seed Supply enquiries:

Seeds office: 02 6881 6210

www.ausgraintech.com



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Other Reading For field pea management guidelines see:

- Northern region field pea management guide (www.pulseaus.com.au)
- Pulses nutritional value and their role in the feed industry, Pulse Australia
- Industry and Investment NSW publications (www.dpi.nsw.gov.au)
 - Field pea: western NSW planting guide
 - Winter crop variety sowing guide
 - Weed control in winter crops
 - Insect and mite control infield crops
 - Pulse Point 5 – Desiccation & harvest of field peas



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